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The Technological Risk and Uncertainty in Governance and Economic Development

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Does technology make the real difference for the knowledge-economy and the good Governance?

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EXECUTIVE SUMMARY

The concept of 'knowledge-based economy', described in the Lisbon agenda for 2010, is too often referred to the application of Information and Communication Technologies (ICTs) as the main driver of economic growth and competitiveness at global level.

According to a broader definition of economic development, social, economic and other kind of changes have to be considered. The simple use of indicators regarding ICT and high-tech sectors, does not take into account the complex interrelations of innovation and technology with the economic structure (globalisation) and the behaviour of operators. Traditional growth models are not able anymore to cope with such radical changes. ICTs cannot be considered as traditional sectors as they are hidden across almost all the sectors of the economy. An analysis of economic stability should be carried out, in relation to the major changes generated by technology and innovation. (ECONOMIC ASPECT)

Moreover, while ICTs have been the source for a greater growth and a change of economic relations (improved Governance), on the other hand they have created a greater number of risks, uncertainties and costs unknown in the past. For instance, the risk related to ICT-based infrastructures of industries and institutions (e.g. energy sector). The presence of information inside the web constitutes a risk for capturing reserved information.

Existing studies are being carried out on this issue at European level, in particular on the determination of the actors, which should be charged to pay for those costs and on the amount of expenditure to front such risks. (RISK GOVERNANCE ASPECT)

This work contributes for the foundation of methodologies of assessment of risks and uncertainties of the knowledge-economy and the consequent shift to e-Governance policies for public and private Institutions. It constitutes as well the theoretical background on which the experience of qualitative appraisal of economic indicators has been based (NESIS project).

1 INNOVATION AND KNOWLEDGE VERSUS ECONOMIC DEVELOPMENT

Economic development and economic growth

At Lisbon European Council held on the 23rd and 24th March 2000 a new strategic goal for the Union has been set. The main aspects of policy, such as employment, economics, social cohesion, as well as competitiveness related to the global economy have been based on a knowledge-based trend of economic development.

According to some basic definitions¹, economic development and growth are described as follows:

economic development: *specifically considered, it is used in order to measure social, economic or other kind of changes. It does not express, then, a change in quantity, but rather in quality. Those changes can be referred to those made by political and financial institutions, or then to the culture and behaviour of citizens, to the production techniques and so on. All those changes, which often take the name of reforms, can lead to an economic growth, whilst their inhibition can lead to a situation of immobility.*

economic growth: *in general meaning the term correspond to economic development. In a more specific meaning, it is related to the apparent revealing of the economic development, which is objectively reached through a growth in employment, capital, consumption, production, etc. There are*

¹ Economic dictionary, Zanichelli, Il Sole 24 Ore

several measurement units but the most used is the GDP. Corrections to it can be made comparing the amount of population in different times. Not only the income per-capita but also its distribution.

In the history of production economies, economic development has mainly been interpreted in the sense of the second of the above mentioned definitions. It has been then based on growth in production quantities, in order to make consumption growing as well. This meant, in practice, the transformation of natural capital and human resources in artificial goods.

In such a conception of development, economic science would like yield to be continuously growing, although resources are actually limited in quantity. Natural and artificial forms of capital are transformed all the time from a form to another but they cannot be really created. The goal of unlimited economic growth produces a certain kind of wealth increase that is responsible for losses in natural resources and quality of life. According to the main principles of economics, the production of goods is justified as long as it satisfies human needs. However, frequently human needs are actually being created rather than being satisfied, so as to increase consumption and make GDP grow continuously. Therefore, the economic system seems to thrive on creating needs. Nowadays citizens are paying for goods that were free in the past, like space, nature, free time, family². Who has ever heard about economic equilibrium, not in the sense of market equilibrium but in the sense of quality of life and a balance between different forces? We have heard about it in biology, but not yet in the social sciences. In fact, the main driving economic force is just growth.

Human capital

Human capital (seen mainly as workforce) has instead other features: it is actually composed by human beings, which are able to work for a certain period of time of their life and then have to be maintained by the system itself. In the same way, the impossibility to make world population growing indefinitely and the present negative trend of the birth rates may lead to a smaller consumption in the long run. So, both components of the production function, from this point of view, have not the characteristic to be incremental factors, at least in the long run. An increment in the quantity of production could in the short run generate a growth in the yield. However, it may involve by the time a lack of natural capital and may not give a real increment of the quality of life. Every good, in economic science, is seen as having a lifetime. As soon as it becomes mature, it decreases its incremental utility and has to be replaced by another, for the exception of a given sub-set of goods.

Knowledge as a key factor for growth

The only factor, which can be then considered to be infinitely growing, is then knowledge (and related innovation and technological development), an aspect related to both components of the production function, because it belongs to human capital as well as to the use of resources. During the human economic development we have seen in fact that the most developed countries have shifted to a different kind of production, highly affected by technology and quality of goods. Greater investments in R&D, spending in educational policies, spreading of knowledge among the citizens and exchange of information and skills have become the recipe for a continuous development, which better fit with the first of the previous definitions of economic development, and involves all the changes which are able to improve citizens' life.

² Maurizio Sajevo - *Notes of environmental economics*; University "La Sapienza" of Rome, 1998
Environmental economics

Besides research and investment in new technologies, ICT and pure innovation, a knowledge-based society has been conceived as a system in which citizens with their skills and knowledge are the essence of the economic development and are then a target for investment and productive allocation of resources. By making citizens and their knowledge the central source of development, improvements in social cohesion, labour policies and access to education have been also considered as key factors. In order to react to the described changes and be able to front the new trends of a knowledge-based economy, we need then those tools, like Indicators and benchmarking, which are able to measure the related performances and to proceed towards a deeper integration and common development of EU Member States.

The focus on competitiveness and Information Technologies

Frequent interpretations of the knowledge-economy are however particularly concerned with aspects of competitiveness at global level, to be fronted by higher levels of innovation, creation and knowledge and by an economic structure based on intangible assets, mainly Information and Communication Technologies (ICTs).

The complexity of socio-technological systems

Whenever searching for tools for measurement of competitiveness and growth in a knowledge-based economy, there is a risk of treating the issue focusing simply on high-tech innovation, without considering their implications on the general economic structure and on its stability. According to our view, the knowledge economy implies more complex causal relations in respect to the traditional economy of goods and services. ICTs in particular cannot be treated as simply as traditional economic sectors as they are not isolated in a particular area. They are becoming more and more interrelated with almost all the other economic sectors and constitute often the basic tools on which the economic system is built. So, the amount of interrelations and the complexity of technological innovation increase and affect the whole economic system. This view is actually corroborated by the results obtained by the qualitative appraisal of indicators' building process in NESIS project³. The analysis of the Finnish context has shown how ICTs have been internalised so deeply in all economic activities, that they are actually comparable to electricity. Would we be able to study for how much electricity is contributing to our own national economic growth? It would be really hard, besides probably useless.

A survey conducted in Finland about the use of ecolabelling as a competitive strategy for companies⁴ has shown how this tool for environmental management was often not able anymore, like in the past, to give a company greater competitiveness. Using ecolabels was rather a factor for maintaining the already achieved level of competitiveness, because most companies had already adopted different kinds of environmental management tools. In the same way, it might well happen, like in the Finnish case, that ICTs do not represent anymore a factor of growth, but only a factor for maintaining the competitive position already achieved. In given sectors, they are just necessary and not optional strategies anymore. Continuous innovation, education and research are needed in order to front future and unknown challenges.

The impact of ICTs on economic stability

The standard economic theory is therefore not able anymore to cope with innovation as a single separate area⁵. The traditional production function and

³ Maurizio Sajeve, *A Methodology for Quality Assurance in NESIS project - The communication of risks and uncertainties for a continuous improvement*, NESIS proceedings, october 2004

⁴ Maurizio Sajeve, *Ecolabelling: a tool for environmental protection and a competitive strategy for companies. Case study in Finnish Pulp and Paper Industry*, University of Jyväskylä, Department of Environmental Management, Finland, 1999

⁵ Teodoro Dario Togati - *On the stability of the New Economy*, University of Turin, Italy, 2004

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innovation on
economic systems**

the quantitative relationships used in the past do not take into account the qualitative changes coming from innovation and globalisation. For instance, besides productivity rise, not much attention is given to stock exchange boom and effects on distribution, such as, for instance, the rising of inequality. Economic development, differently from before, might well be generated only by information exchange. ICTs have produced growth based on intangible services, and the perception of 'space' and 'time' by economic operators has changed. Various barriers have disappeared, e.g. some kinds of transaction costs, psychological and legal barriers that prevented investments and trading in foreign assets. ICT has actually represented a key element of the formation of a globalised market, with its positive and negative aspects. A greater competitiveness and a lowering of prices have been reached mostly but not only by the creation of multinational companies and the merging of enterprises into bigger alliances. On the other hand, negative effects have been produced as well: SMEs cannot afford competition anymore and homemade goods, often characterized by higher levels of quality, are paradoxically not able to fulfil the product standards set at international level. SMEs front a very high risk of disappearing from the economic scene, with heavy consequences for those countries whose economies are based on small and medium entrepreneurship (e.g. Italy). Off-shoring, as an effect of global markets, has become a common practice and economic operators are turning around the globe in search for low-cost productive factors, with negative effects on internal markets, competitiveness and employment at a national level. Social and environmental dumping practices in developing countries have represented as well aspects of unfair competition, which are impossible to afford by developed countries.

The challenge is to see how new technologies are affecting and changing economic systems and to pursue a proper allocation of resources, able to front the emergent instances for economic development.

When dealing with upcoming technologies, those elements of complexity and uncertainty should therefore be considered, trying to avoid a mere quantification of innovative technologies by simple and self-standing indicators.

New approaches are needed to represent the changes and the effects of ICTs on the whole economic structure and on economic stability. Well-defined indicators, such as the attitude of people towards money, investments etc. should be used to describe the qualitative changes and interactions inside the system, as well as the negative effects we have to deal with. For instance, it would be interesting to know how many SMEs have been established and how many have been closed, what kind of effects of the general employment and economic stability have been generated and what losses and gains have been produced. Indicators, able to identify and measure intangible goods, knowledge and creation, would help to better describe the new societies and economies.

The Commission Staff Working Paper for the next European Innovation Scoreboard 2004 on the competitive analysis of innovation performance reports: *'...the advance of the US over Europe in productivity growth is not only a matter of technological innovation. US enterprises seem to be better in reshaping their organisation and management methods in order to maximise profit from new technologies...' , '... innovative delivery modes and integrated product and brand management are crucial elements of transformation of*

technological innovation into new markets' and 'Non technical innovation may well be 'the missing link that prevents Europe from taking full advantage of new technological opportunities.'

2 THE ILLUSION OF INFORMATION TECHNOLOGIES: RISKS AND UNCERTAINTIES

The dematerialisation and the information society

Today's society tends to be subject to a process of increasing dematerialisation. Technological development has permitted an intensive use of Information and Communication Technologies (ICTs) as main driving force of the modern economy as well as of social and personal relations. Such a process has permitted a decrease of time for interaction, user-friendly devices, exchange of greater amounts of information.

Besides economic considerations about innovation and ICTs, the risks and uncertainties associated with the development and use of new technologies should be carefully analysed, in order to avoid a dogmatic belief in a 'technological God', able to solve all human problems without creating new ones. Strategic planning activities, directed to a conscious and deliberate process of economic and technological progress, are not always able to deal with emergent and unexpected issues and phenomena. Therefore, as they might be often unknown or even unknowable in advance, a flexible strategy has to be used, in order to cope with future events⁶.

E-governance, e-business, e-relations and all other e-applications to traditional life have the power of giving us a sense of perfection and certainty in a seemingly comfortable world. They are often considered as the perfect solution for the problems of good governance. The new electronic world has something to offer but on the other hand takes its toll, for instance in terms of privacy and personal freedom.

ICT risk analysis

ICTs appear as fragile and prone to faults and failures as any other technology. As they carry information, semantic errors of different kinds may emerge (in terms of meaning, time and source). Last but not least, ICTs are not isolated entities; they are embedded in larger social systems, involving a specific set of risks.

When discussing the effects caused by the pervasive use of ICT, there is a need to distinguish between:

- ICT as a mean (for several uses)
- ICT as the object.

Both points are not completely independent: how ICT is deployed in society will inescapably affect how it can be used.

Whenever a deeper analysis of risks and uncertainties is carried out, it is important to distinguish different aspects of ICT and their particular implications:

- High-level services enabled by ICT (e.g., e-relation supported by web sites, e-training);
- ICT applications used by individuals and organizations (e.g. software);
- Society-wide services (e.g., e-government, e-health);

⁶ Mintzberg, Ahlstrand, Lampel - *Strategy Safari* (Financial Times Prentice Hall, 1998).

- The information infrastructure (the basic hardware, software and services providing the connectivity and the underlying functionality: e.g., Internet, the Web and their components).

Technical and health risks

Everyday, computers are being attacked by viruses; as a result huge amounts of data might suddenly disappear. Electronic devices are scrutinized for their allegedly negative health impacts on human beings. Technologies may be extremely advanced, while at the same time they may have a short lifecycle and their value, in respect to natural resources used, may be very small and therefore inducing wasteful consumption. They always require electricity, so that their dependence on increasing energy production is inevitable. Moreover, pollution effects of electronic components are often underestimated. There are numerous studies about the health and psychological effects of ICT tools on the brains of infants and their social skills, which raise awareness as to their potential risks.

Risks in e-Governance

Electronic services are become important in our societies but often not so much as it would appear. E-governance is not always able to serve all citizens. Issues such as identity management, privacy, but also more technical ones like the use of names in websites have been poorly treated. Other issues are completely disregarded: for instance, safety and security of infrastructures, which are critically dependent on ICT, such as energy supply and telecommunications networks, are subject to criminal attacks through ICT networks or to other kinds of failure.

Criticism

In such cases, a common policy at European level will be necessary in order to face risk and security matters. Those issues are actually being analysed at the moment and will lead to new Directives, will be implemented through the different national legal systems. E-tools are not always the preferred ones, or the most easily usable by all people. In the bank sector of some EU countries, the rendering of e-services has completely replaced the traditional ones or in some cases put additional costs to the traditional front office services, which are mostly used by older citizens. On the other hand, as shown by a pilot study⁷ realised by the Italian Statistical Institute (ISTAT), in certain regions and sectors in Italy e-businesses have hardly rolled out. Transactions are made by simple phone calls and by consolidated practices and networks, without obviously harming business.

The possibility of integration of technologies

The knowledge-based society that Europe would like to build should be based on an integration of different tools. Whenever a PC is not available, or users are willing to interact directly between themselves, when energy supply is inadequate, a telephone call or ordinary mail could remain a valid and often more reliable option. This means that the use of e-Governance or e-business tools should not substitute a good postal service, but should instead operate as complementary services. In the same vain, the use of mobile phones should not substitute public telephones, as in certain situations mobile communication can be more expensive and not easier than a call from a public telephone, especially when the remote connection is unavailable or the signal too weak.

Are all of those issues taken into account when planning and using new technological products? Are the possible effects new technologies will have on society taken into account? Of course they are not because not all implications are known and many of them cannot be even identified in advance. Can we state that new technologies have no adverse effects on human beings? Reductionism of scientific knowledge, as a certain and unique basis for

⁷ ISTAT- EU Qualify - *Pilot Study* - Andrea de Panizza and Alessandro Fazio

decision-making, has to be reconsidered so as to give way to the communication of uncertainties and eventually to a conception of science that is able to question its own assumptions, leading to new and unexpected answers and solutions.

While most scientists and decision-makers themselves have never fully believed in the illusion of perfect knowledge, the general public has often lent too much trust to scientific achievements. 'Scientifically proved' was normally interpreted as 'beyond any doubt', the word 'scientific' having a halo of rigour and reliability. Only recently, there has been growing criticism highlighting the new dangers associated with science and science-based technology. Unless the scientific community is willing to enter into an open debate about these issues and accepts the increasing claims of participation by different stakeholder groups, it will confront a serious credibility crisis.

According to Popper's philosophy, the game of democracy is in principle never-ending: whoever decides that Governments and their actions do not need to be controlled anymore and have to be considered as approved, he sorts out of the game. So, he sorts out of the democracy. This concept has been described by substituting the term 'democracy' to the term 'science'. It is primarily referred to the role of science, so that we can never talk about a finally approved form of science. In our case we can never talk about a finally approved panacea of high-tech.

3 THE IMPACT OF ICTs ON GOVERNANCE ISSUES

The notion of governance

In order to get a broader view of concepts such as government and governance different definitions are reported below.

The Governance Working Group of the International Institute of Administrative Sciences, 1996, states: *"governance is a broader notion than government, whose principal elements include the constitution, legislature, executive and judiciary. Governance involves interaction between these formal institutions and those of civil society. Governance has no automatic normative connotation. However, typical criteria for assessing governance in a particular context might include the degree of legitimacy, representativeness, popular accountability and efficiency with which public affairs are conducted"*.

The European Commission, in its [White Paper on European Governance](#), of July 2001, about "the way in which the Union uses the powers given by its citizens" defines *"European governance"* as *"the rules, processes and behaviour that affect the way in which powers are exercised at European level, particularly as regards openness, participation, accountability, effectiveness and coherence. These five "principles of good governance" reinforce those of subsidiarity and proportionality."* (CEC 2000: 8).

Within the European context, the Commission on Global Governance reports:

"Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest." (Commission on Global Governance 1995: 2).

The term "governance" is a very versatile one. It is used in connection with several contemporary social sciences, especially economics and political science.

It originates from the need of economics (as regards corporate governance) and political science (as regards State governance) for an all-embracing concept capable of conveying diverse meanings not covered by the traditional term "government".

Referring to the exercise of power overall, the term "governance", in both corporate and State contexts, embraces action by executive bodies, assemblies (e.g. national parliaments) and judicial bodies (e.g. national courts and tribunals).

The term "governance" corresponds to the so-called post-modern form of economic and political organisations.

According to the political scientist Roderick Rhodes, the concept of governance is currently used in contemporary social sciences with at least six different meanings: the minimal State, corporate governance, new public management, good governance, social-cybernetic systems and self-organised networks⁸.

According to Renate Mayntz⁹ (Summer Academy on IPP, Würzburg, September 7-11, 2003), the term governance would refer to "a basically non-hierarchical mode of governing, where non-state, private corporate actors participate in the formulation and implementation of public policies" (Rhodes, 1997). In the beginning of 1970s, a shift from a hierarchical to a more cooperative form of government has taken place. This shift is represented by a move from government to governance, where private organisations are involved in policy-making. In complex systems non-hierarchical forms of decision-making increases the available information and takes into account different values in order to get greater flexibility and adaptability.

"e²-governance": The application of ICT to governance processes is one of the examples of the progressive development of interactions within a society. According to B. De Marchi, S. Funtowicz & Â. Guimarães Pereira - "e²-Governance: electronic and extended", the terminology of e-governance would be nowadays commonly understood as electronic format of services provided by Governments to citizens, characterised by higher levels of performance. But the term "governance" refers, within the European Union, as a broader concept, to the "participation of civil society in the decision process that concerns all citizens", leading to "extended governance"¹⁰.

- ❑ **Electronic &**
- ❑ **extended participation**

According to the OECD, whilst e-Government would be limited to the electronic delivery of government services, e-governance would also involve consultation of citizens and e-democracy¹¹.

In the presence of different interpretations, the only possible solution would be to determine what we would like to talk about: either about e-government services only, or add to them extended participation, so that one may speak

⁸ http://europa.eu.int/comm/governance/governance/index_en.htm

⁹ http://www.ioew.de/governance/english/veranstaltungen/Summer_Academies/SuA2Mayntz.pdf

¹⁰ B. De Marchi, S. Funtowicz & Â. Guimarães Pereira - e²-Governance: electronic and extended

¹¹ From e-government to e-governance: the OECD experience; Elizabeth Muller, e-government project OECD - SitExpo 2004; 18-21 February 2004, Casablanca, Morocco

of governance. However, we have to recognise that the growth of wealth, sharing of information and educational levels in Europe has resulted in a greater awareness of political processes and a greater demand for participation, so that (good) governance as a concept befits modern social standards. This also leads to the realisation that modern society's increasing levels of complexity tends to be at odds with the reductionist views of scientific specialists.

The dominance of "e" on "governance"

The urgent decisions, which have to be taken in the governance of such a complex environment, will probably lead to the dominance of ICTs, without much respect for the particular interests of consumers. When considering the above-mentioned implications in the development of ICTs and their application, the issue is then to determine, in a dedicated study, how they should be developed and eventually 'governed'. Strengths and weaknesses of socio-technological systems should be determined, in the consciousness that not all of them are likely to be known. Instances of participation and inclusive policies, dialogue and processes of negotiation between different actors may constitute best.

The basic participatory culture and the good *paper* governance

Although scientific knowledge can enlighten complex issues, it is necessary to acknowledge existing uncertainties, risks and the role of value judgements. A reconsideration of governance in this sense seems unavoidable. E-applications have to be evaluated neither on the basis of operational criteria only, nor exclusively against the requirement of the extended participation, which can come up from the power of information of electronic services, but also at a deeper level of basic social culture that is behind the application of tools. Electronics and ICTs should not be the only superior technology one can imagine, and should not function as a high-tech cover-up of poor services and weak economies. Instead, they should be treated according to what they actually can contribute to the provision of good services and good governance. No more than that. They should be an addition to an already existing good '*paper governance*'.

The previous argument is supported by the OECD's conception of e-government. In the OECD's view, e-government is more about "government" than about "e". The OECD's guidelines for a successful implementation of e-government express a political vision on cooperation, involving a focus on customers and a stress on the importance on participation. ICTs have in fact to be integrated into a general policy to promote the information society, which include services of high quality, a more effective administration and a political commitment to achieving this. The OECD talks about sharing of good practices and infrastructures, considering existing barriers and incentives to collaboration. Understanding of customer needs is also seen as a key issue, as well as the possibility for users to choose different modes of interaction and to participate in the policy process. Policies to promote the quality of information and feedback mechanisms make the provision of information more useful and enhance participation. Responsibilities have to be clearly defined and made transparent through adequate methods of accountability and evaluation of costs, benefits and impacts of e-government. Integration with traditional models, testing, promotion, analysis of results and continuous improvement, feedback to participants, international cooperation, are important factor of success as well. Extended peer reviews have already been implemented.

It would be an illusion to present ICTs as the solution or as a part of the solution. ICT is just one way of speeding up the construction of an information society, only if a well-planned knowledge economy is being implemented. Therefore, when presenting the knowledge economy, we cannot just refer to

the technical and practical achievements thanks to ICTs, as the latter are mere details of a greater reality, even if important details.

3.1. Knowledge-based society: divergences within the European Union

The 'electronic' and 'extended' Governance: ICT = participation? According to B. De Marchi, S. Funtowicz & Â. Guimarães Pereira - "e²-Governance: electronic and extended" "'governance', as it is now being developed within the European Union, is a broader and more creative idea. It is about extending the participation of civil society in the decision process that concerns all citizens. Thus in governance the 'e' stands for 'extended' as well as 'electronic'."

This means that, certainly, ICT technologies represent a tool to improve interaction between policy and society, particularly in terms of the quantity of information that can be spread in a unit of time. By the application of ICT platforms to governance, involvement of the public in decision-making can be enhanced and extended to a greater number of individuals. Learning processes can also be promoted.

According to different sources (see references), over the last few decades citizens' involvement in policy-making has increased, both in a European and a wider international context. In environmental and health risk management, and in the development of new products and services, meetings with consumers and organised groups of citizens have taken place and their opinions and concerns have been taken into account. In fact, because of widespread education and cultural participation, governance cannot take the wishes of the population for granted. Instead, governments have to interact and even negotiate with citizens and give account of what they are up to. The simple fact that they have been elected does not imply a justification of unilateral modes of decision-making.

The need of participation Participatory instruments are required in order to achieve a renewed and deeper involvement of the public, especially concerning matters surrounded by above-average uncertainty, such as environmental and health hazards. Renewed processes of decision-making, and a different framework for sharing information and increasing communication are then required. More than ever, governance has to take into account the interactions between policy and society, through transparency, accountability, responsibility and extended participation.

However, this does not mean that increased participation by the public in itself can justify certain actions. For that matter, even the use of participation has to be carefully evaluated, in order to avoid that it will become an empty gesture, only for show. Different interests, values and viewpoints have to be taken into account, especially in situations characterised by high complexity and systemic uncertainty because then value-judgements come in as necessary ingredients of decision making procedures.

"Facts are uncertain, values in dispute, stakes high, and decisions urgent. All too often, we must make hard policy decisions where our only scientific inputs are irremediably soft." ('Post normal science', Funtowicz and Ravetz 1992; 1993).

An extended dialogue is then a policy tool to deal with emergent changes in environmental and human circumstances and to adapt the social structure in accordance with them, as highlighted by the strategic school of

transformation and configuration¹². Consequently, a focus on governance rather than on government will make it possible to deal with the present and future political realities whereby participation is an indispensable ingredient of decision-making.

However, could we state that ICT represents a direct source for higher participation?

The role of social culture and the importance of information

Because of cultural differences between countries, the sharing of knowledge and the levels of transparency are highly different. The perception of uncertainties diverges from country to country and from region to region. In Northern Europe, information that is subject to an estimated uncertainty of 10% is accepted as reliable, as then the probability that the information is correct is quite high. In cases where information is very unreliable, the social culture forbids the release of such information. The opposite might happen in Southern Europe, where in many cases there is a lack of transparency while unreliable information is released too easily.

This means that in some given contexts scientific information is shared among the general public, and available through media, public structures, libraries, national Institutions and Universities. Information is not kept as an instrument of power and is instead free for everybody. In other contexts, particularly those of Southern Europe, the general public is not aware of given information, which is reserved to the practitioners of that particular field. Sometimes students are taught methodologies, which are already obsolete when they enter their workplaces for the first time. Private and public sectors are called to educate them again, so that they are not immediately productive.

A greater, and maybe unaffordable/undesirable challenge would be to reach a common measurement for the evaluation of the quantity and quality of information, not only for inches and centimetres but especially for cultural views and estimations.

Participation culture without the "e"

So, if we look at the multitude of social cultures, we can realise that in some social communities the importance of information has always played an important role in social life, even before the application of new information technologies. In many places, postal services have always been so efficient to enable people to exchange information in 24 hours time. Before the Internet appeared, telephone or fax were the available technologies to arrange transactions. ICT services, certainly, have constituted a further step in practical and technical terms. However, the level of participation of citizens has not necessarily increased as a direct consequence of ICT tools. The concept of governance based on transparency and sharing of knowledge already existed before the Internet came into being. The achievements of ICTs have only speed up the process, not being the only source of participation.

An example of this approach is the Swedish model¹³: *"In Sweden, whether you ask employees or managers, the theme of teamwork quickly appears in connection with leadership issues. Compared to other countries, teamwork is of particular importance. Good leaders are seen as dealing well with such*

¹² Mintzberg, Ahlstrand, Lampel - Strategy Safari (Financial Times Prentice Hall, 1998).

¹³ Laurence Romani - *Management style in Sweden: teamwork and empowerment*; Stockholm School of Economics (http://www.sweden.se/templates/Article____6934.asp)

processes as team integration, consensus building and co-operation. Their second strong feature is an orientation toward employees, which expresses itself in leaders' delegation and empowerment."

In Sweden, private and public organisations are commonly founded on a cooperative and participatory approach, so that every decision is actually the product of several consultations. People are asked to get involved and to contribute with their own expertise, without referring too much to the hierarchical structure. In connection with the consultation phase, leaders can be described as "*primus inter pares*". Leaders who are strongly directive are considered to be rude and seen as not having respect for the other actors.

This approach has even been criticised for being too time-consuming and complicating a final decision. So, the length of the process might represent a source of inefficiency. Moreover, if serious disagreements arise, at a certain point workers may avoid to participate so that leaders can easily sustain their own views. There is the risk that people believe that democratic participation comes with the further implementation of ICT, while in fact it is the product of social culture. If a participatory social culture is absent, ICT cannot achieve very much in this area.

3.2. The Governance in the European Union

The definition of governance given in the White Paper by the European Commission cited above refers to five criteria to judge the exercise of power at European level.

The Commission White Paper (CEC 2001: 10) refers in particular to the following:

Openness, that is clarity of language as well as access to the working of institutions.

Participation, from conception to implementation, is assumed to ensure the quality and relevance of policies.

Accountability concerns the allocation of responsibility at all the different institutional levels.

Effectiveness refers to the delivery of timely policies on the basis of clear objectives and needs and to a principle of coherence between ideas, actions and objectives. Every action has to be concretely applicable and effective in reaching the objectives.

Coherence is about applying a consistent approach to policies and actions.

The European Commission considers those as "principles of good governance" to be applied to "all levels of government – global, European, national, regional and local" (CEC 2001: 10).

The frequently used term 'transparency', according to the advice of Waltner-Toews and Lang is no longer present in the list. Their metaphor of glass refers to the idea of a barrier, while "the older political discourse around democracy suggests that what is required is accountability, not just transparency". The 'new' political discourse inside the European Union contains ideas of dialogue, shared responsibility, efficacy and consistency within a system, which is recognized as extremely complex.

However, it might be remarked that in the common sense, the abstract meaning of '**transparency**' is that there are no odds that prevent citizens

from knowing what is really happening at the administrative or political level. Even if the responsibilities can be easily allocated, the absence of transparency does not allow citizens to get acquainted with what is actually going on at higher level. Of course, full transparency is probably unreachable, a certain level of it, however, is a must. On the other hand, **shared responsibility** might sound difficult to manage. One of the easiest ways to avoid responsibility is to share it with others, so that none is really charged to respond of it.

As previously mentioned, also **sharing of knowledge** of different nature might be considered as an important criterion. The White Paper speaks of "the need for a wide range of disciplines and experience beyond the purely scientific" (CEC 2001: 19) and of "regional and local knowledge and conditions are taken into account when developing policy proposals" (CEC 2001: 12). Multidisciplinary perspectives are able to see a given phenomenon from different points of view so as to get a more complete picture of it. Both theoretical views and experimental and practical experience should be taken into account.

In another sense, sharing of knowledge can be interpreted as the quantity and quality of real and transparent information spread among citizens in different fields. We may talk about the **amount and quality of available information**, generally speaking, which can be more or less easily collected from different sources. Another important aspect is the **credibility** that public and private institutions have got among citizens. The White Paper emphasises the "*use of networks, grassroots organizations, national, regional and local authorities*" (CEC 2001: 11)., Frequently, one source of information is not enough; information from different sources has to be compared in order to gain sufficient insight into the pros and cons of certain policies.

A governance strategy characterised by **open dialogue** within the organisation is desirable as well. **Learning** processes are to be enhanced as well as flexibility and **transformation and reconfiguration** of processes related to the adaptation to emergent strategies, which arise from possible unexpected changes of the outside and inside environment.

OECD's has, in some occasions, referred also to principles of public governance¹⁴; here we find 'transparency' and 'public accountability' as major concepts, but also other concepts, such as:

- ❑ adherence to the rule of law
- ❑ the primacy of the collective interest over private interests
- ❑ respect for the rights of individuals
- ❑ equity
- ❑ transparency
- ❑ democratic accountability
- ❑ responsibility for future generations

¹⁴ From e-Government to e-Governance: The OECD Experience, *Elizabeth Muller* E-Government Project, OECD, SitExpo2004 - 18-21 February 1004, Casablanca - Morocco

4 CONCLUSIONS

The achievements in ICT have constituted a very important step in economic and social development. Nevertheless, there is an actual risk of seeing it as the solution for all problems. If this appears to be the case, it may lead to new problems and unexpected negative effects. For this reason, a careful evaluation and a deeper understanding of the risks involved would help in governing all e-related activities, such as e-governance or e-business.

Indicators of economic development, especially concerned with knowledge-economy, should not regard too simply the achievements in high-tech sectors. They should instead look at the implications of technological development on the whole global economy and analyse the structural changes that affect the economic development, according to the broader definition above described. They should look as well to possible risks and uncertainties in the use of new technologies, whose future effects are often not likely to be known. The integration of different techniques could help in fronting possible faults or unexpected emergencies.

Secondly, the application of ICTs to Governance related issues should not be considered as a mere implementation of the most developed technologies to already existing communication frameworks and cultures. It should also mean extended participation. In a new context characterised by a knowledge-based society, there is a need for cultural change, leading to consensus at a conceptual level. In other words, the simple implementation of new technologies will not automatically lead to a knowledge-based society. It requires instead a structural change in cultural relations and communication, a higher level of transparency and a reliable system for sharing information and knowledge. As already noted before, e-governance cannot be reduced to the simple addition "e" + "governance" = "e-governance". It has to be an operational tool applied within the context of a well-structured governance policy.

Traditional democratic processes, which legitimate the action of Governments, have to confront a new challenge: they have to communicate to citizens the scientific basis of their policy decisions. Citizens are being more and more involved in political processes, and therefore new models of governance have to be developed and supported by appropriate interfaces.

A dedicated methodology for the analysis and measurement of e-governance activities and their contribution to economic development is needed. ICT tools remain only tools. The challenge is to apply them properly to different contexts according to suitable policies and within uncertain and dynamic environments, as learning over time and knowledge-based strategies precludes deliberate control on whole systems.

The assessment, developed at a first stage in occasion of the NESIS project for the assessment of new economy statistical indicators, is then charged to put in evidence and communicate critical aspects, risks and uncertainties of the process of measurement of economy. The indicators developed will be added with a value of their quality and their capacity to carry relevant and useful information.

**The need of
quality
assessment of
scientific
information
(quality appraisal
of e-Europe
indicators'
building process)**

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